

### **REMARKS**

Reconsideration of this Application and entry of the foregoing amendments are respectfully requested.

Claims 1 to 17 remain in the case.

The Examiner's indication that claims 4-7 and 9-15 contain allowable subject matter is acknowledged.

Claims 1-17 have been amended. No new matter is being added. Support for the amendments to claims 1 to 16 can be found, for example, at paragraphs [0038] to [0047]. Paragraphs [0018] to [0021] of the description have been amended accordingly.

### **REJECTIONS UNDER 35 U.S.C. § 103, FIRST PARAGRAPH**

Claims 1-3, 8, 16 and 17 stand rejected under 35 U.S.C. §103(a), as being unpatentable over U.S. Publication No. 2001/0014592 to Helms in view of U.S. Patent No. 6,246,286 to Persson.

Helms discloses a baseband predistortion method applied to multi-carrier transmitter, wherein multiple carrier-specific predistortion functions implemented by means of multiple Look Up tables (LUTs) are calculated and applied to the carriers (one LUT by carrier), the predistorted carriers being then summed to form the composite predistorted IF signal. As shown in Figure 4, the generation of each carrier related LUT is performed by comparing the carrier related input signal and the carrier related output measuring signal, which is obtained following a digital demodulation of the IF output measuring signal and digital carrier selection and filtering. This digitally and well filtered base band signal does

not normally contain any out-of-band distortion information, which is absolutely needed to construct the carrier related LUT. Such method cannot be exploited in practical multi-carrier applications, as shown for example by simulations using a well established software, Advanced Design System (ADS) from Agilent Technologies Inc., carried out on a commercial LDMOS amplifier driven by three carriers WCDMA signal. Obtained results are shown in Figures A1-A5 in Annex I. Predistorting each carrier leads to the generation of an additional spectrum re-growth around that carrier that may spill out excess non-linearity (distortion) in the adjacent carrier and may corrupt the in-band and out-band spectrum of this adjacent carrier. The claimed invention calls for the synthesis of the predistorted signal using only one LUT for the whole communication signal whenever it is single- or multiple-carriers signal, in sharp contrast with Helms' method of generating the predistorted signal using multiples LUT, i.e. one LUT per carrier.

Persson's method introduces within the communication signal a distortion detection signal, such as a ramp-up signal or a ramp-down signal, and uses it to characterize the amplifier and then deduce the predistortion function, in sharp contrast with the method recited in Applicants' claims which does not require any distortion detection signal or any training sequence to pre-compensate for the nonlinearity of the PA, the method recited in Applicants' claims being signal- and power amplifier- independent since it can be used with any power amplifiers and with any communication signal (any modulation etc.). In addition Persson performs the characterization for the purpose to extract the complex distortion AM-AM and AM-PM using analog circuits either at RF frequencies or IF frequencies, in contrast with the method recited in Applicants' claims where the characterization of the

amplifier is digitally carried out in the time domain at base band. While Persson's method allows power amplifier linearization, the claimed invention allows linearization of the whole transmitter. In Persson, each I and Q predistorted signal is converted to analog voltages that are used to modulate an RF carrier using I-Q modulator, whereas the claimed invention teaches digitally modulating I and Q predistorted signals to avoid any problem related to analog modulation such as I and Q imbalance and DC offset.

From the foregoing, neither Helms nor Persson teaches or even hints at the method and device recited in the amended independent claims.

In view of the above and foregoing, it is respectfully requested that the Examiner withdraw his rejection of claims 1-3, 8, 16 and 17 under 35 U.S.C. §103(a).

The rejections of the original claims are believed to have been overcome by the present remarks and the introduction of new claims. From the foregoing, further and favorable action in the form of a Notice of Allowance is believed to be next in order, and such an action is earnestly solicited.

The undersigned is available for telephone consultation at any time.

Respectfully submitted,

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By:



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*Attachments: Annex I*